CHAPTER VIII

CONCLUSIONS

A dynamic distillation calculation using thermodynamic models as SRK equation of state has been reported to be highly successful. The present study has demonstrated without doubt the effectiveness and usefulness of such concepts when it is applied to an actual distillation column, Debutanizer column of The Bangchak Petroleum Public Company Limited.

The design method adopted here may be divided into 2 stages, i.e., generation of thermodynamic calculation and dynamic distillation. Three thermodynamic models, GRK, SRK and PR, may be used in calculation and compared between each other.

The starting point of the generation of thermodynamic calculation stage, all thermodynamic properties, i.e., enthalpy, vapor-liquid equilibrium and density of liquid and vapor mixture are calculated by using GRK, SRK and PR models. The physical constants and coefficient of equation are collected from Equilibrium Stage Separation Operation in Chemical Engineering (1981).

In the second stage, the dynamic distillation is developed. The Debutanizer column of The Bangchak Petroleum Public Company Limited has been selected as our case study. The data one first checked for credibility and consistency by comparing with the steady state distillation which calculated by the existing program, PRO II. Once the data are accepted as reliable, the actual distillation are applied to study the dynamic behavior.

For different case study, typical responses of the GRK, SRK and PR models are considered. For every case study, the SRK model shows a reasonably close representation of the real data from the Debutanizer column in bottom and top of column. The PR model is less deviated from real data than GRK model.

From the results, it can be concluded that the SRK model can be applied to a Debutanizer column of The Bangchak Petroleum Public Company Limited. The advantages of this approach is as a guidelines for selecting a suitable thermodynamic model for column design.

However, the use of a proper thermodynamic model does not guarantee the required accuracy but provides the designer with the flexibility required to fit the model to the process need.